

## Grant Round Application for G-034-01

### DIRECTOR'S COMMENTS G—034-01

#### **Reduction of Flares and Capture of Natural Gas Liquids with Vortex Tools**

Submitted by: Bakken Frontier, LLC (aka Bakken Western Services)

Principal Investigator: John Simmons

Request for \$390,000

Total Project Costs \$790,000

Duration: 12 months

**Description of the Project:** The project will seek to build upon past successes achieved in Texas with the use of the Vortex tool to capture NGL's and reduce the amount of flaring in the Bakken. Vortex Tools use the flow velocities on the surface in flow lines/pipelines to consolidate vapors to liquids through centrifugal force. The Vortex tools create a spinning, organized flow for solids and liquids in the outer bands and organized flow for gases in a center core. This allows for more efficient carrying of fluids through pipe, both vertically and horizontally. The centrifugal force created by the spinning of the fluids causes density separation as those fluids travel through the pipe. Gas – entrained in the oil, condensate or water – is liberated by the centrifugal force. Additionally, natural gas vapors are consolidated into liquids and blend with the hydrocarbon liquids and can be recovered. Whiting Petroleum Corporation has provided a commitment letter indicating they will provide a site for a pilot test.

#### **Technical Reviewers' Comments**

##### **Reviewer G-34-01A**

Unclear how project determines which vortex location achieves greater success. Suggestion that NGL's captured by vortex method has higher economic value than normal gas processing is not validated.

**Recommendation: Do Not Fund**

##### **Reviewer G-34-01B**

The goals and objectives of this project are consistent with those of the NDIC/OGRP. If successful, the project will increase the profitability and efficiency of ND's oil and gas wells. I strongly agree that there should be no negative environmental impacts and there may be some positive impacts resulting from the project. I was pleased to see that a local ND firm is being considered to manufacture the vortex tools and that a local firm would do the installation. This meets the objective of aiding economic growth locally.

**Recommendation: Fund**

##### **Reviewer G-34-01B**

Would like to know more about where the markets are for the NGL liquids collected in the bullet tanks. Where are they going to be sold? Has crude oil marketing issues been discussed with any clients or oil purchasers? Selling Bakken crude oil is already a challenge due to the high vapor pressures encountered, especially when 70+% is currently moved by rail in ND.

**Recommendation: Funding to be Considered**

**Director's Recommendations:**

**To fund in the amount of \$350,000 with the following contingencies:**

- **Written agreement with an oil producer to install at least 1 unit at one of their sites;**
- **Written agreement with natural gas liquids purchasing company;**
- **Applicant identifies and demonstrates to the Department of Mineral Resources staff that they will meet the conditions of the State's Gas Capture Order (Order #24665)**